Claims

[1] An RF front-end transceiver comprising:
an oscillator for outputting a resonant frequency signal whose frequency is controlled by a frequency control signal;
a receive amplifier for amplifying and outputting a receive RF signal;
a receive mixer for mixing the receive RF signal amplified and the resonant frequency signal to convert the receive RF signal into a receive base band signal;
a transmit mixer for mixing a transmit base band signal and the resonant frequency signal to convert the transmit base band signal into a transmit RF signal; and
a transmit amplifier for amplifying and outputting the transmit RF signal,
wherein a resonant frequency of at least one of the receive amplifier, the receive mixer, the transmit mixer and the transmit amplifier is controlled by the frequency control signal.

[2] The RF front-end transceiver according to claim 1, wherein the frequency control signal is provided from a frequency synthesizer or a base band processor.

[3] An RF front-end receiver comprising:
an oscillator for outputting a resonant frequency signal whose frequency is controlled by a frequency control signal;
a receive amplifier for amplifying and outputting a receive RF signal; and
a receive mixer for mixing the receive RF signal amplified and the resonant frequency signal to convert the receive RF signal into a receive base band signal,
wherein a resonant frequency of at least one of the receive amplifier and the receive mixer is controlled by the frequency control signal.

[4] The RF front-end receiver according to claim 3, wherein the frequency control signal is provided from a frequency synthesizer or a base band processor.

[5] The RF front-end receiver according to claim 3, wherein the frequency control signal includes an analog frequency control signal and a digital frequency control signal.

[6] The RF front-end receiver according to claim 3, wherein the frequency of the resonant frequency signal is controlled by an analog frequency control signal and a digital frequency control signal, and
wherein, a resonant frequency of the receive amplifier and the receive mixer is controlled by the frequency control signal or only the digital frequency control

signal.

[7] The RF front-end receiver according to claim 6, wherein the receive amplifier has a net input resistance controlled by the digital frequency control signal.

[8] An RF front-end transmitter comprising:
an oscillator for outputting a resonant frequency signal whose frequency is controlled by a frequency control signal;
a transmit mixer for mixing a transmit base band signal and the resonant frequency signal to convert the transmit base band signal into a transmit RF signal; and
a transmit amplifier for amplifying and outputting the transmit RF signal,
wherein a resonant frequency of at least one of the transmit mixer and the transmit amplifier is controlled by the frequency control signal.

[9] The RF front-end transmitter according to claim 8, wherein the frequency control signal is provided from a frequency synthesizer or a base band processor.

[10] The RF front-end transmitter according to claim 8, wherein the frequency control signal includes an analog frequency control signal and a digital frequency control signal.

[11] The RF front-end transmitter according to claim 8,
wherein the frequency of the resonant frequency signal is controlled by an analog frequency control signal and a digital frequency control signal, and
wherein, a resonant frequency of the transmit amplifier and the transmit mixer is controlled by the frequency control signal or only the digital frequency control signal.

[12] The RF front-end transmitter according to claim 11, wherein the transmit amplifier has a net input resistance controlled by the digital frequency control signal.

[13] An amplifier comprising:
an amplification unit for amplifying a signal inputted to an input unit and outputting the amplified signal to an output unit; and
an input resonant unit connected to the input unit, and for changing a resonant frequency in accordance with a frequency control signal,
wherein the frequency control signal is used to control a frequency of a resonant frequency signal outputted from an oscillator.

[14] The amplifier according to claim 13, further comprising:
an output resonant unit connected to the output unit, and for changing the

resonant frequency in accordance with the frequency control signal.

[15] The amplifier according to claim 13, wherein the frequency control signal includes an analog frequency control signal and a digital frequency control signal.

[16] The amplifier according to claim 13, wherein the resonant unit is any one of a first LC tank including a inductor controlled by the digital frequency control signal and a capacitor controlled by the analog frequency control signal; a second LC tank including a capacitor controlled by the digital frequency control signal, a capacitor controlled by the analog frequency control signal and a fixed capacitor; a third LC tank including an inductor and a capacitor controlled by the digital frequency control signal, and a capacitor controlled by the analog frequency control signal and a fixed inductor; and a fourth LC tank including an inductor controlled by the digital frequency control signal, an inductor controlled by the analog frequency control signal and a fixed capacitor.

[17] The amplifier according to claim 13, wherein the frequency control signal includes a digital frequency control signal.

[18] The amplifier according to claim 13, further comprising:
a net resistance control unit connected to the input unit, and for changing the net input resistance in accordance with the frequency control signal.